

REMARKS

Claims 1, 17 and 19 have been amended. New claim 23 has been added. Thus, claims 1, 3-5, 7, 8 and 12-23 are now pending in the present application. Support for the amendment to claims 1 and 17 may be found in the specification at page 12, lines 13-16. Support for new claim 23 may be found in the specification at page 5, lines 6-8, and page 14, line 16 to page 15, line 2. Thus, no new matter has been added. Reconsideration and withdrawal of the present rejections in view of the comments presented herein are respectfully requested.

Rejection under 35 U.S.C. §102(b)

Claims 1, 4, 6, 7, 8, 12-18 and 22 were rejected under 35 U.S.C. §102(b) as being anticipated by Fujishima et al. (US 6,239,231). Claims 1 and 17 as amended recite a positive resist composition comprising a resin component (A) that exhibits increased alkali solubility under action of acid, said component (A) comprising structural units (a1), (a2), (a3), (a4); an acid generator (B) and an organic solvent (C). Fujishima et al. neither discloses nor suggests the combination of structural units (a1), (a2), (a3) and (a4). Thus, Fujishima et al. alone neither anticipates nor renders obvious the presently claimed invention. In view of the comments presented above, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §102(a).

Rejections under 35 U.S.C. § 103(a)

Claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujishima et al. (US 6,239,231) in view of Iwai et al. (US 2004/0110085), and Claims 20-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujishima et al. (US 6,239,231) in view of Kodama et al. (US 6,517,991).

The Office Action alleges that it would have been obvious to include a structural unit having a hydroxyl group as taught by Iwai et al. within the positive resist composition of Fujishima to improve resolution, pattern cross-section and dry etching resistance. The Office Action also alleges that it would have been obvious to include a polycyclic hydrocarbon repeating unit as disclosed by Kodama et al. within the positive resist composition of Fujishima to further control developing properties and dry etching resistance. However, as explained below, neither combination of references would render the presently claimed invention obvious.

The recitation of structural unit a4 in these claims requires that the component be derived from a (meth)acrylate ester in addition to including a hydroxyl group. Neither of the secondary references disclose or suggest such a component, and the Examiner has acknowledged that the Fujishima et al. reference does not disclose the hydroxyl group. Thus, none of the cited references, either alone or in combination, discloses or suggests the combinations of components (a1), (a2), (a3) and (a4) recited in pending Claims 1, 3-5, 7, 8 and 12-22. Accordingly, these claims cannot be *prima facie* obvious.

Moreover, even if a *prima facie* showing of obvious were raised over the pending claims, the combination of components (a1), (a2), (a3) and (a4) would not be obvious over the cited combination of references in view of the unexpected result associated with the recited positive resist composition. In particular, the recited compositions exhibit a reduction of the proximity effect without reducing the depth of focus.

When comparing Examples 1 and 3 of the present specification, in which (a1), (a2), (a3) and (a4) are used, with Comparative Examples 1 and 4 of the present specification, in which the structural unit (a1) is not used, and with Comparative Example 3 and 6 of the present specification, in which the structural unit (a2) is not used, the positive resist compositions recited in Claims 1 and 17 as amended show excellent effects.

In Comparative Example 3, in which the structural unit (a2) is not used, the depth of focus within the Dense pattern was 400 nm, and the depth of focus within the Iso pattern was 200 nm. The I/D dimensional difference, which is a criterion of the proximity effect, was 30 nm. In contrast, in Example 1, in which (a1), (a2), (a3) and (a4) are used, the depth of focus within the Dense pattern was 400 nm, and the depth of focus within the Iso pattern was 300 nm, and the I/D dimensional difference was 18 nm. In addition, in Comparative Example 6, in which the structural unit (a2) is not used, the depth of focus within the Dense pattern was 800 nm, and the depth of focus within the Iso pattern was 400 nm, and the I/D dimensional difference was 36 nm. On the other hand, in Example 3, in which (a1), (a2), (a3) and (a4) are all used, the depth of focus within the Dense pattern was 800 nm, and the depth of focus within the Iso pattern was 500 nm, and the I/D dimensional difference was 21 nm. These results show that Examples 1 and 3 provide a similar or improved depth of focus, while also offering a significant reduction in the I/D dimensional difference that is a measure of the proximity effect, compared with Comparative

Examples 3 and 6. In addition, in Comparative Example 1 and 4, in which the structural unit (a1) is not used, the positive resist compositions were unresolvable.

These unexpected results are not disclosed or suggested by the cited references, and could not have been predicted based these references. Thus, the unexpected results would effectively rebut any *prima facie* showing of obviousness raised against Claims 1, 3-5, 7, 8 and 12-22. As such these claims are allowable over the prior art of record.

In view of the comments presented above, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a).

New Claim 23

New claim 23 recites a composition that includes the combination of components (a1), (a2), (a3), and (a5). None of the cited references disclose or suggest such a combination. Accordingly, this claim is presented as patentable over the prior art of record.


CONCLUSION

Applicants submit that all claims are in condition for allowance. Should there be any questions concerning this application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Respectfully submitted,

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